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FEE TRANSMITTAL for FY 2003

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☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 320.00

Complet if Known	
Application Number	10/025,684
Filing Date	December 26, 2001
First Named Inventor	ESTHER WESSELS
Examiner Name	U. Rajguru
Art Unit	1711
Attorney Docket No.	030268-0290427

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 033975

Deposit Account Name: PILLSBURY WINTHROP LLP

The Commissioner is authorized to: *(check all that apply)*

☒ Charge fee(s) indicated below ☒ Credit any overpayments

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	750	2001	375	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	520	2003	260	Plant filing fee	
1004	750	2004	375	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) 0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims		Fee from below	Fee Paid
Total Claims		-20** =		X =
Independent Claims		- 3** =		X =
Multiple Dependent				=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	410	2252	205	Extension for reply within second month	
1253	930	2253	465	Extension for reply within third month	
1254	1,450	2254	725	Extension for reply within fourth month	
1255	1,970	2255	985	Extension for reply within fifth month	
1401	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing brief in support of an appeal	320.00
1403	280	2403	140	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,300	2453	650	Petition to revive - unintentional	
1501	1,300	2501	650	Utility issue fee (or reissue)	
1502	470	2502	235	Design issue fee	
1503	630	2503	315	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	750	2809	375	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	750	2810	375	For each additional invention to be examined (37 CFR 1.129(b))	
1801	750	2801	375	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 320.00

SUBMITTED BY				(Complete *if applicable*)	
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Signature	Richard A. Steinberg			Date	September 9, 2003

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Attorney Docket: 030268-0290427
Client Reference: 3711US/CNT1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: ESTHER WESSELS, ET AL.

Application No.: 10/025,684 Group No.: 1711

Filed: December 26, 2001 Examiner: Rajguru, Umakant K.

Title: LASER-WRITABLE POLYMER COMPOSITION

September 9, 2003

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

APPELLANT'S BRIEF (37 C.F.R. section 1.192)

This brief is in furtherance of the Notice of Appeal, filed in this case on July 14, 2003.

The fees required under Section 1.17(c), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL.

This brief is transmitted in triplicate. (37 C.F.R. section 1.192(a)).

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I. REAL PARTIES IN INTEREST (37 C.F.R. section 1.192(c)(1))

The real party in interest in this appeal is the following party: DSM N.V.

II. RELATED APPEALS AND INTERFERENCES

(37 C.F.R. section 1.192(c)(2))

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal: None.

III. STATUS OF CLAIMS (37 C.F.R. section 1.192(c)(3))

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: **18**

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: **13-22**
2. Claims withdrawn from consideration but not canceled: **12**
3. Claims pending: **1-11, 23-28**
4. Claims allowed: **None**
5. Claims rejected: **1-11, 23-28.**

C. CLAIMS ON APPEAL

The claims on appeal are: Claims 1-11 and 23-28.

IV. STATUS OF AMENDMENTS (37 C.F.R. section 1.192(c)(4))

An Amendment After Final Rejection, filed April 30, 2003, which included amendments to claims 1 and 4 and the cancellation of claim 12, was not entered (Advisory Action, mailed May 23, 2003).

V. SUMMARY OF INVENTION (37 C.F.R. section 1.192(c)(5))

One embodiment of the invention relates to a polymer composition which, upon exposure to irradiation with laser light, will form dark markings, relative to the color of the polymer composition. See, *e.g.,* page 1, lines 5-8; page 2, lines 9-12. The composition includes, in an embodiment thereof, a) polymer, and b) from 0.1 to 10 wt%, relative to the total weight of the polymer composition, of antimony trioxide particles. The antimony trioxide particles may have an average particle size above 0.5 micrometer. The component also includes c) a nacreous pigment, for example, at least 0.3 wt% nacreous pigment. See, *e.g.*, page 4, lines 25-26; page 6, lines 20-23; page 7, lines 19-20. In another embodiment, the amount of the antimony trioxide may be between 0.5 and 5 wt %. See, *e.g.,* page 4, line 26.

The laser light which may be used to make the dark markings on the light colored polymer background includes laser light of wavelength 1064 nanometers (nm), such as may be generated using a relatively available and inexpensive Nd:YAG laser, as well as laser light from other sources, such as an Excimer laser, having a wavelength in the range between 200 and 500 nm. See, *e.g.,* page 2, lines 9-19.

In one embodiment of the invention, the antimony trioxide has a particle size between 1 and 8 micrometers (μm). See, *e.g.,* page 4, lines 8-10. In another embodiment the composition includes between 2 and 5 wt% of antimony trioxide with an average particle size of at least 1.5 nm. See, *e.g.,* page 3, line 29; page 4, lines 30-31. In other embodiments, the composition includes between 0.1 and 10 wt% antimony trioxide and at least 0.1 wt% of nacreous pigment, or between 0.1 and 5 wt% antimony trioxide and at least 0.1 wt%, or at least 0.4 wt%, of nacreous pigment, or between 0.5 and 3 wt% antimony trioxide and between 0.1 and 3 wt% nacreous pigment. See, *e.g.,* page 4, lines 11-31; page 5, lines 24-28; page 6, lines 24-32 to page 7, line 1; page 7, lines 17-32. The particle size and weight percent of the antimony trioxide alone or in mixture with nacreous pigment, provides good contrast between the dark markings and the light background. See, *e.g.,* page 4, lines 15-18; 24, 30; page 5, lines 3-4; page 6, lines 27-29; 31-32. Representative nacreous pigments are described on page 7, lines 8-16.

The weight ratio of the nacreous pigment and antimony trioxide may lie between 1:5.5 and 1:50. See, *e.g.,* original claim 8, page 6, lines 24-26; page 7, line 32 to page 8, line 6.

In an embodiment of the invention, the composition is free of halogen-flame retardant. See, *e.g.,* page 6, lines 9-10. In another embodiment, the composition includes a halogen-free flame retardant, such as, for example, melamine cyanurate. See, *e.g.,* page 9, lines 5-7, 11-12.

According to some embodiments of the invention, the contrast value of the dark markings formed upon exposure to irradiation with laser light and the light colored laser

markable polymer composition is at least 1.5. See, *e.g.,* page 3, lines 13-19; page 12, lines 1-12.

In another aspect of the invention, articles are made from the polymer composition, in whole or in part. See, *e.g.,* page 9, lines 24-32 and page 10, lines 1-5.

The polymers used in the composition may be selected from any suitable polymer, including thermoplastics, thermosets, resins, or elastomers, and may include mixtures of two or more polymers. See, *e.g.,* page 8, lines 18-21.

The compositions may be prepared by any suitable means. In one embodiment, the ingredients are added separately to the polymer during polymer extrusion. In another embodiment, a masterbatch of the antimony trioxide with nacreous pigment, in the desired proportions, and, optionally, in a polymer matrix, is prepared and mixed with the polymer of the polymer composition to achieve the desired amount of antimony trioxide and nacreous pigment. See, *e.g.,* page 9, lines 13-23.

Thus, embodiments of the invention under consideration relate to laser markable polymer compositions in which the laser markings formed during use of the composition by exposure of the composition to irradiation with laser light are darker than the color of the polymer composition which has not been exposed to irradiation with laser light.

VI. ISSUES (37 C.F.R. section 1.192(c)(6))

The issue on appeal is whether the Examiner erred in rejecting claims 1-11 and 23-28 under 35 U.S.C. § 103(a) as being unpatentable over JP 8041291 in view of Andes *et al* (US 6,280,520) and Kehal (US 6,043,304) or Gareiss *et al* (US 6,184,282).

VII. GROUPING OF CLAIMS (37 C.F.R. section 1.192(c)(7))

For purpose of this appeal, the claims may be grouped as follows:

The Claims of the following groups do not stand or fall together. Appellant(s) contend the claims are separately patentable.

I. Claims 1-5, 9, 11;

II. Claims 6-8, 23;

III. Claim 10;

IV. Claim 24;

V. Claims 25-28.

VIII. ARGUMENTS

A. The Composition Disclosed In JP 8041291 Provides A Light Image On A Dark Background.

The following discussion of JP 8041291 (JP 291) will be with respect to the English (Machine) Translation, of record, with reference to the appropriate section or paragraph numbers, in the right columns.

The disclosure of JP 291 relates to a composition comprising (A) an epoxy resin, (B) a phenolic curing agent, (C) an inorganic filler, (D) a curing accelerator, (E) 0.1 to 1.0 wt% carbon black and (F) 0.2 to 5 wt% antimony trioxide. See, *e.g.,* Section (57)[Abstract] (page P.2); Claim 1 (page P.2); paragraph [0004].

The problem addressed in JP 291 is to provide a laser markable composition based on carbon black which can be used with a YAG laser and provide vivid printing (see [0002]). This problem is apparently resolved by using 0.1 to 1.0 wt% carbon black having certain specified values for average particle diameter (10 to 100 nm) and maximum particle diameter (1000 nm), with BET specific surface area of 25 m^2/g or greater; in combination with 0.2 to 5 wt% antimony trioxide of maximum particle diameter 100 μm or less (see [0004]).

According to the operation for pringing the YAG printable laser marking composition, the patentees explain that at the wavelength of the YAG laser heat is generated causing only the carbon black to evaporate, thereby leaving a white marking, (see, [0007]).

Furthermore, as explained in paragraph [0008] the amount and properties of the carbon black is selected to provide a black color (rather than black, ash color).

The function of antimony trioxide in the composition of JP 291 is discussed in paragraph [0009]. It is explained that antimony trioxide is used for imparting flame resistance. It is further noted that within the selected parameters of particle size and amount adequate flame retardance is achieved without formation of soot deposits on the formed characters.

The disclosure of JP 291 does not convey any information that antimony trioxide itself would function to, or be able to, provide color markings by exposure to laser irradiation.

The examples, especially paragraph [0012], confirm that the composition provides a white printing. Since contrast is good, it necessarily follows that the background is dark relative to the printing.

Accordingly, as may be readily appreciated, the disclosure of JP 291 is of a flame retardant laser markable composition which is black (or at least dark) and which upon exposure to laser light forms white markings in the exposed areas.

B. The Composition of JP 219 Does Not Include A Nacreous Pigment

There is no disclosure in JP 219 of a nacreous pigment. The compositions may include inorganic filler, including fused silica powder, crystal silica powder, alumina, etc. (see [0006]). Other optional additives include silane coupling agent, other flame retardant, natural or synthetic wax or other mold release agent, silicone oil and rubber (see [0010]). There is neither hint nor suggestion motivating the inclusion of any type of pigment, including nacreous pigment.

C. The Disclosure of Andes *et al* US 6,280,520 (US 520) Does Not Provide Motivation To Include Nacreous Pigment In The Composition Of JP 291

The disclosure of US 520 relates to a pearl luster pigment for an opaque or semi-opaque substrate formed from alternating layers of materials of low refractive index and high refractive index or of metal, the difference in refractive indices being at least 0.1 (see, *e.g.*, Abstract). The pearl luster pigment is noted to meet the objective of providing an interference pigment having strong interference colors, a high angular dependency of the interference colors, and a high hiding power (column 2, lines 10-13).

The pigment may be used for pigmenting paints, printing inks, plastics, glazes for ceramics and glass and cosmetics (column 2, lines 40-42). Other potential applications for the pigment include pigmenting securities and document papers, and packaging, and for the laser marking of polymeric materials and papers (column 2, lines 43-46).

The patentees continue by explaining that for this purpose (presumably the immediately previously mentioned applications) the pigments can be employed as mixtures with customary commercial pigments, examples being organic and inorganic absorption pigment, metal-effect pigments, and LCP pigments (column 2, lines 47-50).

Neither the remainder of the general description in columns 2 through 6 nor the Examples in columns 6 through 13 provide any details for any of the end use applications including for laser marking. There is no indication suggesting the type of laser marking for which the pearl luster pigment would be useful and, in particular, there is no suggestion to use the pearl luster pigment in a laser marking composition designed for use with a YAG laser. There is no disclosure of the type(s) of polymer materials or other igredients or proportions for the theoretical use of pearl luster pigment in laser marking.

From the examples in columns 6 through 13 it is confirmed that the pearl luster pigments according to US 520 have relatively dark colors, *e.g.,* dark green powder color with a deep green interference color (Example 1, column 6); dark green powder with a pronounced color flop (Example 2, column 7); grey-green powder with a deep green interference color (Example 3, column 7) or with a pronounced color flop (Example 4, column 8); or grey-blue mass tone with a deep blue interference color (Example 7, column 10).

Since the disclosure of US 520 does not provide any evidence that the pearl luster pigment would be useful in a YAG laser markable composition, the purpose for the laser markable composition of JP 291, the practitioner of ordinary skill in the art would not have been motivated to include US 520's pearl luster pigment in the compositions of JP 291.

Furthermore, there is no reasonable expectation that the addition of a pearl luster pigment to the YAG laser markable composition, as required by JP 291, would be successful. That is, the practitioner would reasonably expect the presence of the pearl luster pigment of dark green, grey-green or grey-blue coloration with deep green or deep blue interference color or color flop (see Examples), and of high hiding power (see column 2, lines 10-13), would obscure the resulting white image.

Therefore, it is respectfully submitted that the practitioner of ordinary skill in the art would not have been motivated to combine the disclosures of JP 291 and US 520.

D. Adding US 520's Pearl Luster Pigment To The Carbon Black/Antimony Trioxide Laser Markable Composition of JP 291 Would Not Result In A Light Color Laser Markable Polymer Composition

While for the reasons set forth above, it is considered that it would not have been *prima facie* obvious to modify the compositions of JP 291 in view of US 520, even if the disclosures were forcibly combined, the resulting composition would not be of a light color providing a dark marking upon exposure to irradiation by laser light.

As explained above, adding a dark colored pearl luster pigment to a carbon black based composition would not make the composition of light color nor would the resulting markings (assuming that the pearl luster does not interfere with the evaporation of the carbon black upon exposure to YAG laser) be dark relative to the unexposed background polymer composition.

Therefore, adding US 520's pearl luster pigment to the compositions of JP 291 would not result in a composition as set forth in the appealed claims.

E. The Disclosures Of Kehal (US 6,043,304) Or Gareiss *Et Al* (US 6,184,282) Do Not Supply The Deficiencies of JP 291 And US 520

The disclosures of Kehal US 6,043,304) and Gareiss, *et al* (US 6,184,282) are cited merely for their disclosures of melamine cyanurate as a flame retardant.

Since neither reference relates to laser markable compositions the person of ordinary skill in the art, having the knowledge that melamine cyanurate may be used as a flame retardant in an ethylene/vinyl acetate copolymer based adhesive composition (as in Kehal) or in a polyamide molding composition, would not have considered that the subject matter of the present invention as set forth in the various claimed embodiments under appeal, would have been *prima facie* obvious.

Accordingly, for all of the above reasons, the rejection of claims 1-11 and 23-28 under 35 USC 103(a) should not be sustained.

F. The Embodiments Of The Invention Defined By Claims 1-5, 9, and 11 Under Appeal Would Not Have Been *Prima Facie* Obvious Over The Cited References

The disclosures of JP 291 with US 520 and the tertiary references to Kehal and Gareiss *et al* do not provide evidence that a laser markable composition of light color comprising polymer, from 0.1 to 10 wt% of antimony trioxide particles and an average particle size of about 0.5 micrometers and a nacreous pigment would have been *prima facie* obvious.

The disclosure of JP 291 is of a laser markable composition of dark color by virtue of the presence of the essential carbon black component. While the terms "dark" and "light" may be relative as to intensity, they are always understood, in relationship to each other, as "light" being lighter than dark and "dark" being darker than light.

Although the Amendment of April 30, 2003, which would have inserted into claim 1 "which provides a dark marking upon exposure to irradiation by laser light" was not entered, the rejected claim, still recites a polymer composition of "light" color. The person of ordinary skill in the art would not consider the compositions of JP 291, containing from 0.1 to 1.0 wt% carbon black to be a "light" composition; especially recognizing that the object of JP 291 is to provide a high contrast laser marking and the laser marking is white.

Furthermore, since the objective of JP 291 is to provide a white marking, it would not have been *prima facie* obvious to add the pearl luster pigment of US 520 which, as noted in the disclosure and examples, has a hiding power and is of dark green or grey-green or grey-blue color. The practitioner would not have had a reasonable expectation of success in providing a laser markable composition which provides a contrasting (white) marking upon irradiation with YAG laser light if the composition also included the dark pearl luster pigment of US 520.

G. The Embodiments Of The Invention Defined By Claims 6-8 And 23 Would Not Have Been *Prima Facie* Obvious Over The Cited References

Claims 6-8 and 23 each recite a specific amount (*e.g.*, at least about 0.1 wt%) of nacreous pigment or a weight ratio between the nacreous pigment and the antimony trioxide (1:5.5 and 1:50). There is nothing in the disclosure of any of the cited references which would provide any guidelines for adding a nacreous pigment to the compositions of JP 291 in any particular amount or for any particular purpose or effect.

Therefore, one skilled in the art would not have been motivated and would not have had any basis for adding at least 0.1 wt% of nacreous pigment to the compositions of JP 291 or to add a nacreous pigment to provide any particular proportion in relationship to the content of antimony trioxide. Nothing in the disclosure of US 520, for example, indicates the function or effect of the patentee's pearl luster pigment in a laser markable composition, much less that the proportion of pearl luster pigment should be selected in relationship to, for example, the amount of antimony trioxide.

Accordingly, for this separate reason, the rejection of claims 6-8 and 23 under 35 U.S.C. 103(a) should not be sustained.

H. The Embodiment Of The Invention Defined By Claim 10 Would Not Have Been *Prima Facie* Obvious Over The Cited References

Claim 10 is directed to the embodiment of Appellants' invention wherein melamine cyanurate is present as a halogen-free flame retardant. The disclosure of JP 291 admits of the presence of flame retardants in addition to antimony trioxide, but mentions only two halogen-containing flame retardants, hexabromobenzene and brominated epoxy resin (see [0010]).

Therefore, it would not have been *prima facie* obvious, for the practitioner of ordinary skill in the art, if another flame retardant was of interest, to consider looking outside of the class of halogen-containing flame retardants.

The disclosures of Kehal (ethylene/vinyl acetate adhesive compositions) or Gareiss *et al* (polyamide molding compositions) would not have provided the motivation to select melamine cyanurate as the flame retardant for inclusion in the compositions of JP 291 which relates to epoxy resin based compositions. Neither Kehal nor Gareiss *et al* provide any reasonable expectation of success that melamine cyanurate would be a useful flame retardant in an epoxy based laser printable composition.

For example, it is specifically noted that in the alternative embodiment of Kehal where melamine cyanurate is used as flame retardant additive for the ethylene/vinyl acetate copolymer adhesive, the patentee specifically prefers it to be used "in the absence of other flame-retardant additives" (see, column 2, line 25-27). Therefore, Kehal actually would, if anything, teach away from using melamine cyanurate in combination with the antimony trioxide flame retardant of JP 291.

Gareiss *et al* is concerned with the use of melamine cyanurate as flame-proofing agent in flameproof polyamide molding compositions which are filled with fibrous filler (see, *e.g., column 1, lines 10-13) or preferably* glass fibers, particularly short glass fibers (see, *e.g.,* column 2, lines 9-34).

Since the compositions of JP 291 are neither polyamide molding compositions nor fiber filled, the practitioner would not have been motivated by Gareiss *et al* to incorporate melamine cyanurate in the compositions of JP 291 nor would there have been a reasonable expectation of success in achieving or increasing flame retardancy.

Therefore, for these additional reasons, the rejection of claim 10 under 35 U.S.C. 103(a) should not be sustained.

I. The Embodiment Of The Invention Defined By Claim 24 Would Not Have Been *Prima Facie* Obvious Over The Cited References

Claim 24 is directed to the embodiment of Appellants' invention wherein the composition has the property that when exposed to laser light, a mark is formed with a contrast value of at least 1.5. This contrast value is a measure of the contrast between the dark marking and the light background, using the test procedure described in the specification on page 13, lines 1-12.

Claim 24, therefore, provides further emphasis for the conclusion that the claimed embodiments of the laser markable compositions are remarkably different in kind and function from the laser markable compositions of JP 291 wherein a light (white) image is formed on a dark background.

Therefore, since JP 291 does not disclose or suggest a laser markable composition which produces, upon exposure to laser light a mark (dark) with a contrast value of at least 1.5 relative to the background (light), the rejection of claim 24 should not be sustained.

J. The Embodiments Of The Invention Defined By Claims 25-28 Would Not Have Been *Prima Facie Obvious Over The Cited References*

Claims 25-28 are directed to the embodiment of Appellants' invention wherein a light colored laser markable polymer composition comprises polymer, from 0.1 to 10 wt%, based on the polymer, of antimony trioxide with an average particle size about 0.5 micrometer and at least 0.3 wt% of a nacreous pigment. Furthermore, the composition has the property that, when exposed to laser light, the composition forms a mark with a contrast value of at least 1.5.

As discussed above, none of the cited references describe a laser markable composition which forms a dark image, relative to the composition, upon exposure to laser light, such difference between the mark and the composition being quantified by the contrast value. None of the cited references provide any reason or motivation to include at least 0.3 wt% nacreous pigment in a laser markable composition.

Therefore, for each of these additional reasons, the rejection of claims 25-28 under 35 U.S.C. 103(a) should not be sustained.

K. Conclusion

Appellants were the first to discover that a laser markable polymer composition may be made with a light color, which will provide dark markings of high contrast and which may be written on using an inexpensive YAG laser, as well as other laser devices such as an Excimer laser, by incorporating antimony trioxide and a nacreous pigment in the polymer composition.

The cited prior art does not disclose or suggest the features and limitations as set forth in claims 1-11 and 23-28. Accordingly, it is respectfully submitted that the Honorable Board of Patent Appeals and Interferences should reverse the decision of the Examiner, and not sustain the rejection of claims 1-11 and 23-28.

Date: September 9, 2003

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CLAIMS

1. A laser markable polymer composition of light color comprising:

a) a polymer

b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles having an average particle size above 0.5 micrometer ; and

c) a nacreous pigment.

2. Polymer composition according to claim 1, characterized in that the antimony trioxide has a particle size between 1 and 8 micrometer.

3. Polymer composition according to claim 2, characterized in that the amount is between 0.5 and 5 wt.%.

4. Polymer composition according to claim 1, wherein the polymer composition is free of halogen-flame retardant.

5. Polymer composition according to claim 1, comprising between 2 and 5 wt. % antimony trioxide with an average particle size of at least 1.5 micrometers.

6. Polymer composition according to claim 1 containing from 0.1 to 5 wt % antimony trioxide and at least 0.1 wt.% of a nacreous pigment.

7. Polymer composition according to claim 1, containing between 0.5 and 3 wt. % antimony trioxide and between 0.1 and 3 wt. % nacreous pigment.

8. Polymer composition according to claim 1, wherein the weight ratio of the nacreous pigment and the antimony trioxide lies between 1:5.5 and 1:50.

9. Polymer composition according to claim 1, wherein the polymer composition contains a halogen-free flame retardant.

10. Polymer composition according to claim 9, characterized in that it contains melamine cyanurate as the halogen-free flame retardant.

11. Article, wholly or partly made of the polymer composition according to claim 1.

12. Process for applying a dark laser marking onto a light background, in which an article consisting, at least at the place where the marking is applied, of a polymer composition containing a polymer and at least 0.1 wt.%, relative to the total weight of the polymer composition, of antimony trioxide having an average particle size above 0.5 micrometer, is irradiated with laser light in the pattern of the marking.

23. Polymer composition according to claim 1 containing from 0.5 to 10 wt % antimony trioxide and at least 0.1 wt.% of a nacreous pigment.

24. The composition of claim 1 wherein when exposed to laser light the composition forms a mark with a contrast value of at least 1.5.

25. A light colored laser markable polymer composition comprising:

a) polymer

b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles with an average particle size above 0.5 micrometer; and

c) at least 0.3 wt % of a nacreous pigment,

wherein when exposed to laser light the composition forms a mark with a contrast value of at least 1.5.

26. Polymer composition of claim 25 wherein the antimony trioxide particles have a particle size between 1 and 8 micrometers.

27. Polymer composition according to claim 25, wherein the polymer composition is free of halogen-flame retardant.

28. Polymer composition according to claim 25 containing from 0.1 to 5 wt % antimony trioxide and at least 0.4 wt.% of a nacreous pigment.

Attorney Docket: 030268-0290427
Client Reference: 3711US/CNT1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: ESTHER WESSELS, ET AL.

Application No.: 10/025,684 Group No.: 1711

Filed: December 26, 2001 Examiner: Rajguru, Umakant K.

Title: LASER-WRITABLE POLYMER COMPOSITION

September 9, 2003

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

APPELLANT'S BRIEF (37 C.F.R. section 1.192)

This brief is in furtherance of the Notice of Appeal, filed in this case on July 14, 2003.

The fees required under Section 1.17(c), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL.

This brief is transmitted in triplicate. (37 C.F.R. section 1.192(a)).

I. REAL PARTIES IN INTEREST (37 C.F.R. secti n 1.192(c)(1))

The real party in interest in this appeal is the following party: DSM N.V.

II. RELATED APPEALS AND INTERFERENCES

(37 C.F.R. section 1.192(c)(2))

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal: None.

III. STATUS OF CLAIMS (37 C.F.R. section 1.192(c)(3))

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: **18**

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: **13-22**
2. Claims withdrawn from consideration but not canceled: **12**
3. Claims pending: **1-11, 23-28**
4. Claims allowed: **None**
5. Claims rejected: **1-11, 23-28.**

C. CLAIMS ON APPEAL

The claims on appeal are: Claims 1-11 and 23-28.

IV. STATUS OF AMENDMENTS (37 C.F.R. section 1.192(c)(4))

An Amendment After Final Rejection, filed April 30, 2003, which included amendments to claims 1 and 4 and the cancellation of claim 12, was not entered (Advisory Action, mailed May 23, 2003).

V. SUMMARY OF INVENTION (37 C.F.R. section 1.192(c)(5))

One embodiment of the invention relates to a polymer composition which, upon exposure to irradiation with laser light, will form dark markings, relative to the color of the polymer composition. See, *e.g.,* page 1, lines 5-8; page 2, lines 9-12. The composition includes, in an embodiment thereof, a) polymer, and b) from 0.1 to 10 wt%, relative to the total weight of the polymer composition, of antimony trioxide particles. The antimony trioxide particles may have an average particle size above 0.5 micrometer. The component also includes c) a nacreous pigment, for example, at least 0.3 wt% nacreous pigment. See, *e.g.*, page 4, lines 25-26; page 6, lines 20-23; page 7, lines 19-20. In another embodiment, the amount of the antimony trioxide may be between 0.5 and 5 wt %. See, *e.g.,* page 4, line 26.

The laser light which may be used to make the dark markings on the light colored polymer background includes laser light of wavelength 1064 nanometers (nm), such as may be generated using a relatively available and inexpensive Nd:YAG laser, as well as laser light from other sources, such as an Excimer laser, having a wavelength in the range between 200 and 500 nm. See, *e.g.,* page 2, lines 9-19.

In one embodiment of the invention, the antimony trioxide has a particle size between 1 and 8 micrometers (μm). See, *e.g.,* page 4, lines 8-10. In another embodiment the composition includes between 2 and 5 wt% of antimony trioxide with an average particle size of at least 1.5 nm. See, *e.g.,* page 3, line 29; page 4, lines 30-31. In other embodiments, the composition includes between 0.1 and 10 wt% antimony trioxide and at least 0.1 wt% of nacreous pigment, or between 0.1 and 5 wt% antimony trioxide and at least 0.1 wt%, or at least 0.4 wt%, of nacreous pigment, or between 0.5 and 3 wt% antimony trioxide and between 0.1 and 3 wt% nacreous pigment. See, *e.g.,* page 4, lines 11-31; page 5, lines 24-28; page 6, lines 24-32 to page 7, line 1; page 7, lines 17-32. The particle size and weight percent of the antimony trioxide alone or in mixture with nacreous pigment, provides good contrast between the dark markings and the light background. See, *e.g.,* page 4, lines 15-18; 24, 30; page 5, lines 3-4; page 6, lines 27-29; 31-32. Representative nacreous pigments are described on page 7, lines 8-16.

The weight ratio of the nacreous pigment and antimony trioxide may lie between 1:5.5 and 1:50. See, *e.g.,* original claim 8, page 6, lines 24-26; page 7, line 32 to page 8, line 6.

In an embodiment of the invention, the composition is free of halogen-flame retardant. See, *e.g.,* page 6, lines 9-10. In another embodiment, the composition includes a halogen-free flame retardant, such as, for example, melamine cyanurate. See, *e.g.,* page 9, lines 5-7, 11-12.

According to some embodiments of the invention, the contrast value of the dark markings formed upon exposure to irradiation with laser light and the light colored laser

markable polymer composition is at least 1.5. See, *e.g.,* page 3, lines 13-19; page 12, lines 1-12.

In another aspect of the invention, articles are made from the polymer composition, in whole or in part. See, *e.g.,* page 9, lines 24-32 and page 10, lines 1-5.

The polymers used in the composition may be selected from any suitable polymer, including thermoplastics, thermosets, resins, or elastomers, and may include mixtures of two or more polymers. See, *e.g.,* page 8, lines 18-21.

The compositions may be prepared by any suitable means. In one embodiment, the ingredients are added separately to the polymer during polymer extrusion. In another embodiment, a masterbatch of the antimony trioxide with nacreous pigment, in the desired proportions, and, optionally, in a polymer matrix, is prepared and mixed with the polymer of the polymer composition to achieve the desired amount of antimony trioxide and nacreous pigment. See, *e.g.,* page 9, lines 13-23.

Thus, embodiments of the invention under consideration relate to laser markable polymer compositions in which the laser markings formed during use of the composition by exposure of the composition to irradiation with laser light are darker than the color of the polymer composition which has not been exposed to irradiation with laser light.

VI. ISSUES (37 C.F.R. section 1.192(c)(6))

The issue on appeal is whether the Examiner erred in rejecting claims 1-11 and 23-28 under 35 U.S.C. § 103(a) as being unpatentable over JP 8041291 in view of Andes *et al* (US 6,280,520) and Kehal (US 6,043,304) or Gareiss *et al* (US 6,184,282).

VII. GROUPING OF CLAIMS (37 C.F.R. section 1.192(c)(7))

For purpose of this appeal, the claims may be grouped as follows:

The Claims of the following groups do not stand or fall together. Appellant(s) contend the claims are separately patentable.

I. Claims 1-5, 9, 11;

II. Claims 6-8, 23;

III. Claim 10;

IV. Claim 24;

V. Claims 25-28.

VIII. ARGUMENTS

A. The Composition Disclosed In JP 8041291 Provides A Light Image On A Dark Background.

The following discussion of JP 8041291 (JP 291) will be with respect to the English (Machine) Translation, of record, with reference to the appropriate section or paragraph numbers, in the right columns.

The disclosure of JP 291 relates to a composition comprising (A) an epoxy resin, (B) a phenolic curing agent, (C) an inorganic filler, (D) a curing accelerator, (E) 0.1 to 1.0 wt% carbon black and (F) 0.2 to 5 wt% antimony trioxide. See, *e.g.,* Section (57)[Abstract] (page P.2); Claim 1 (page P.2); paragraph [0004].

The problem addressed in JP 291 is to provide a laser markable composition based on carbon black which can be used with a YAG laser and provide vivid printing (see [0002]). This problem is apparently resolved by using 0.1 to 1.0 wt% carbon black having certain specified values for average particle diameter (10 to 100 nm) and maximum particle diameter (1000 nm), with BET specific surface area of 25 m^2/g or greater; in combination with 0.2 to 5 wt% antimony trioxide of maximum particle diameter 100 μm or less (see [0004]).

According to the operation for pringing the YAG printable laser marking composition, the patentees explain that at the wavelength of the YAG laser heat is generated causing only the carbon black to evaporate, thereby leaving a white marking, (see, [0007]).

Furthermore, as explained in paragraph [0008] the amount and properties of the carbon black is selected to provide a black color (rather than black, ash color).

The function of antimony trioxide in the composition of JP 291 is discussed in paragraph [0009]. It is explained that antimony trioxide is used for imparting flame resistance. It is further noted that within the selected parameters of particle size and amount adequate flame retardance is achieved without formation of soot deposits on the formed characters.

The disclosure of JP 291 does not convey any information that antimony trioxide itself would function to, or be able to, provide color markings by exposure to laser irradiation.

The examples, especially paragraph [0012], confirm that the composition provides a white printing. Since contrast is good, it necessarily follows that the background is dark relative to the printing.

Accordingly, as may be readily appreciated, the disclosure of JP 291 is of a flame retardant laser markable composition which is black (or at least dark) and which upon exposure to laser light forms white markings in the exposed areas.

B. The Composition of JP 219 Does Not Include A Nacreous Pigment

There is no disclosure in JP 219 of a nacreous pigment. The compositions may include inorganic filler, including fused silica powder, crystal silica powder, alumina, etc. (see [0006]). Other optional additives include silane coupling agent, other flame retardant, natural or synthetic wax or other mold release agent, silicone oil and rubber (see [0010]). There is neither hint nor suggestion motivating the inclusion of any type of pigment, including nacreous pigment.

C. The Disclosure of Andes *et al* US 6,280,520 (US 520) Does Not Provide Motivation To Include Nacreous Pigment In The Composition Of JP 291

The disclosure of US 520 relates to a pearl luster pigment for an opaque or semi-opaque substrate formed from alternating layers of materials of low refractive index and high refractive index or of metal, the difference in refractive indices being at least 0.1 (see, *e.g.*, Abstract). The pearl luster pigment is noted to meet the objective of providing an interference pigment having strong interference colors, a high angular dependency of the interference colors, and a high hiding power (column 2, lines 10-13).

The pigment may be used for pigmenting paints, printing inks, plastics, glazes for ceramics and glass and cosmetics (column 2, lines 40-42). Other potential applications for the pigment include pigmenting securities and document papers, and packaging, and for the laser marking of polymeric materials and papers (column 2, lines 43-46).

The patentees continue by explaining that for this purpose (presumably the immediately previously mentioned applications) the pigments can be employed as mixtures with customary commercial pigments, examples being organic and inorganic absorption pigment, metal-effect pigments, and LCP pigments (column 2, lines 47-50).

Neither the remainder of the general description in columns 2 through 6 nor the Examples in columns 6 through 13 provide any details for any of the end use applications including for laser marking. There is no indication suggesting the type of laser marking for which the pearl luster pigment would be useful and, in particular, there is no suggestion to use the pearl luster pigment in a laser marking composition designed for use with a YAG laser. There is no disclosure of the type(s) of polymer materials or other igredients or proportions for the theoretical use of pearl luster pigment in laser marking.

From the examples in columns 6 through 13 it is confirmed that the pearl luster pigments according to US 520 have relatively dark colors, *e.g.*, dark green powder color with a deep green interference color (Example 1, column 6); dark green powder with a pronounced color flop (Example 2, column 7); grey-green powder with a deep green interference color (Example 3, column 7) or with a pronounced color flop (Example 4, column 8); or grey-blue mass tone with a deep blue interference color (Example 7, column 10).

Since the disclosure of US 520 does not provide any evidence that the pearl luster pigment would be useful in a YAG laser markable composition, the purpose for the laser markable composition of JP 291, the practitioner of ordinary skill in the art would not have been motivated to include US 520's pearl luster pigment in the compositions of JP 291.

Furthermore, there is no reasonable expectation that the addition of a pearl luster pigment to the YAG laser markable composition, as required by JP 291, would be successful. That is, the practitioner would reasonably expect the presence of the pearl luster pigment of dark green, grey-green or grey-blue coloration with deep green or deep blue interference color or color flop (see Examples), and of high hiding power (see column 2, lines 10-13), would obscure the resulting white image.

Therefore, it is respectfully submitted that the practitioner of ordinary skill in the art would not have been motivated to combine the disclosures of JP 291 and US 520.

D. Adding US 520's Pearl Luster Pigment To The Carbon Black/Antimony Trioxide Laser Markable Composition of JP 291 Would Not Result In A Light Color Laser Markable Polymer Composition

While for the reasons set forth above, it is considered that it would not have been *prima facie* obvious to modify the compositions of JP 291 in view of US 520, even if the disclosures were forcibly combined, the resulting composition would not be of a light color providing a dark marking upon exposure to irradiation by laser light.

As explained above, adding a dark colored pearl luster pigment to a carbon black based composition would not make the composition of light color nor would the resulting markings (assuming that the pearl luster does not interfere with the evaporation of the carbon black upon exposure to YAG laser) be dark relative to the unexposed background polymer composition.

Therefore, adding US 520's pearl luster pigment to the compositions of JP 291 would not result in a composition as set forth in the appealed claims.

E. The Disclosures Of Kehal (US 6,043,304) Or Gareiss *Et Al* (US 6,184,282) Do Not Supply The Deficiencies of JP 291 And US 520

The disclosures of Kehal US 6,043,304) and Gareiss, *et al* (US 6,184,282) are cited merely for their disclosures of melamine cyanurate as a flame retardant.

Since neither reference relates to laser markable compositions the person of ordinary skill in the art, having the knowledge that melamine cyanurate may be used as a flame retardant in an ethylene/vinyl acetate copolymer based adhesive composition (as in Kehal) or in a polyamide molding composition, would not have considered that the subject matter of the present invention as set forth in the various claimed embodiments under appeal, would have been *prima facie* obvious.

Accordingly, for all of the above reasons, the rejection of claims 1-11 and 23-28 under 35 USC 103(a) should not be sustained.

F. The Embodiments Of The Invention Defined By Claims 1-5, 9, and 11 Under Appeal Would Not Have Been *Prima Facie* Obvious Over The Cited References

The disclosures of JP 291 with US 520 and the tertiary references to Kehal and Gareiss *et al* do not provide evidence that a laser markable composition of light color comprising polymer, from 0.1 to 10 wt% of antimony trioxide particles and an average particle size of about 0.5 micrometers and a nacreous pigment would have been *prima facie* obvious.

The disclosure of JP 291 is of a laser markable composition of dark color by virtue of the presence of the essential carbon black component. While the terms "dark" and "light" may be relative as to intensity, they are always understood, in relationship to each other, as "light" being lighter than dark and "dark" being darker than light.

Although the Amendment of April 30, 2003, which would have inserted into claim 1 "which provides a dark marking upon exposure to irradiation by laser light" was not entered, the rejected claim, still recites a polymer composition of "light" color. The person of ordinary skill in the art would not consider the compositions of JP 291, containing from 0.1 to 1.0 wt% carbon black to be a "light" composition; especially recognizing that the object of JP 291 is to provide a high contrast laser marking and the laser marking is white.

Furthermore, since the objective of JP 291 is to provide a white marking, it would not have been *prima facie* obvious to add the pearl luster pigment of US 520 which, as noted in the disclosure and examples, has a hiding power and is of dark green or grey-green or grey-blue color. The practitioner would not have had a reasonable expectation of success in providing a laser markable composition which provides a contrasting (white) marking upon irradiation with YAG laser light if the composition also included the dark pearl luster pigment of US 520.

G. The Embodiments Of The Invention Defined By Claims 6-8 And 23 Would Not Have Been *Prima Facie* Obvious Over The Cited References

Claims 6-8 and 23 each recite a specific amount (*e.g.,* at least about 0.1 wt%) of nacreous pigment or a weight ratio between the nacreous pigment and the antimony trioxide (1:5.5 and 1:50). There is nothing in the disclosure of any of the cited references which would provide any guidelines for adding a nacreous pigment to the compositions of JP 291 in any particular amount or for any particular purpose or effect.

Therefore, one skilled in the art would not have been motivated and would not have had any basis for adding at least 0.1 wt% of nacreous pigment to the compositions of JP 291 or to add a nacreous pigment to provide any particular proportion in relationship to the content of antimony trioxide. Nothing in the disclosure of US 520, for example, indicates the function or effect of the patentee's pearl luster pigment in a laser markable composition, much less that the proportion of pearl luster pigment should be selected in relationship to, for example, the amount of antimony trioxide.

Accordingly, for this separate reason, the rejection of claims 6-8 and 23 under 35 U.S.C. 103(a) should not be sustained.

H. The Embodiment Of The Invention Defined By Claim 10 W uld N t Have Been *Prima Facie* Obvious Over The Cited References

Claim 10 is directed to the embodiment of Appellants' invention wherein melamine cyanurate is present as a halogen-free flame retardant. The disclosure of JP 291 admits of the presence of flame retardants in addition to antimony trioxide, but mentions only two halogen-containing flame retardants, hexabromobenzene and brominated epoxy resin (see [0010]).

Therefore, it would not have been *prima facie* obvious, for the practitioner of ordinary skill in the art, if another flame retardant was of interest, to consider looking outside of the class of halogen-containing flame retardants.

The disclosures of Kehal (ethylene/vinyl acetate adhesive compositions) or Gareiss *et al* (polyamide molding compositions) would not have provided the motivation to select melamine cyanurate as the flame retardant for inclusion in the compositions of JP 291 which relates to epoxy resin based compositions. Neither Kehal nor Gareiss *et al* provide any reasonable expectation of success that melamine cyanurate would be a useful flame retardant in an epoxy based laser printable composition.

For example, it is specifically noted that in the alternative embodiment of Kehal where melamine cyanurate is used as flame retardant additive for the ethylene/vinyl acetate copolymer adhesive, the patentee specifically prefers it to be used "in the absence of other flame-retardant additives" (see, column 2, line 25-27). Therefore, Kehal actually would, if anything, teach away from using melamine cyanurate in combination with the antimony trioxide flame retardant of JP 291.

Gareiss *et al* is concerned with the use of melamine cyanurate as flame-proofing agent in flameproof polyamide molding compositions which are filled with fibrous filler (see, *e.g., column 1, lines 10-13) or preferably* glass fibers, particularly short glass fibers (see, *e.g.,* column 2, lines 9-34).

Since the compositions of JP 291 are neither polyamide molding compositions nor fiber filled, the practitioner would not have been motivated by Gareiss *et al* to incorporate melamine cyanurate in the compositions of JP 291 nor would there have been a reasonable expectation of success in achieving or increasing flame retardancy.

Therefore, for these additional reasons, the rejection of claim 10 under 35 U.S.C. 103(a) should not be sustained.

I. The Embodiment Of The Invention Defined By Claim 24 Would Not Have Been *Prima Facie* Obvious Over The Cited References

Claim 24 is directed to the embodiment of Appellants' invention wherein the composition has the property that when exposed to laser light, a mark is formed with a contrast value of at least 1.5. This contrast value is a measure of the contrast between the dark marking and the light background, using the test procedure described in the specification on page 13, lines 1-12.

Claim 24, therefore, provides further emphasis for the conclusion that the claimed embodiments of the laser markable compositions are remarkably different in kind and function from the laser markable compositions of JP 291 wherein a light (white) image is formed on a dark background.

Therefore, since JP 291 does not disclose or suggest a laser markable composition which produces, upon exposure to laser light a mark (dark) with a contrast value of at least 1.5 relative to the background (light), the rejection of claim 24 should not be sustained.

J. The Embodiments Of The Invention Defined By Claims 25-28 Would Not Have Been *Prima Facie Obvious Over The Cited References*

Claims 25-28 are directed to the embodiment of Appellants' invention wherein a light colored laser markable polymer composition comprises polymer, from 0.1 to 10 wt%, based on the polymer, of antimony trioxide with an average particle size about 0.5 micrometer and at least 0.3 wt% of a nacreous pigment. Furthermore, the composition has the property that, when exposed to laser light, the composition forms a mark with a contrast value of at least 1.5.

As discussed above, none of the cited references describe a laser markable composition which forms a dark image, relative to the composition, upon exposure to laser light, such difference between the mark and the composition being quantified by the contrast value. None of the cited references provide any reason or motivation to include at least 0.3 wt% nacreous pigment in a laser markable composition.

Therefore, for each of these additional reasons, the rejection of claims 25-28 under 35 U.S.C. 103(a) should not be sustained.

K. Conclusion

Appellants were the first to discover that a laser markable polymer composition may be made with a light color, which will provide dark markings of high contrast and which may be written on using an inexpensive YAG laser, as well as other laser devices such as an Excimer laser, by incorporating antimony trioxide and a nacreous pigment in the polymer composition.

The cited prior art does not disclose or suggest the features and limitations as set forth in claims 1-11 and 23-28. Accordingly, it is respectfully submitted that the Honorable Board of Patent Appeals and Interferences should reverse the decision of the Examiner, and not sustain the rejection of claims 1-11 and 23-28.

Date: September 9, 2003

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CLAIMS

1. A laser markable polymer composition of light color comprising:

a) a polymer

b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles having an average particle size above 0.5 micrometer ; and

c) a nacreous pigment.

2. Polymer composition according to claim 1, characterized in that the antimony trioxide has a particle size between 1 and 8 micrometer.

3. Polymer composition according to claim 2, characterized in that the amount is between 0.5 and 5 wt.%.

4. Polymer composition according to claim 1, wherein the polymer composition is free of halogen-flame retardant.

5. Polymer composition according to claim 1, comprising between 2 and 5 wt. % antimony trioxide with an average particle size of at least 1.5 micrometers.

6. Polymer composition according to claim 1 containing from 0.1 to 5 wt % antimony trioxide and at least 0.1 wt.% of a nacreous pigment.

7. Polymer composition according to claim 1, containing between 0.5 and 3 wt. % antimony trioxide and between 0.1 and 3 wt. % nacreous pigment.

8. Polymer composition according to claim 1, wherein the weight ratio of the nacreous pigment and the antimony trioxide lies between 1:5.5 and 1:50.

9. Polymer composition according to claim 1, wherein the polymer composition contains a halogen-free flame retardant.

10. Polymer composition according to claim 9, characterized in that it contains melamine cyanurate as the halogen-free flame retardant.

11. Article, wholly or partly made of the polymer composition according to claim 1.

12. Process for applying a dark laser marking onto a light background, in which an article consisting, at least at the place where the marking is applied, of a polymer composition containing a polymer and at least 0.1 wt.%, relative to the total weight of the polymer composition, of antimony trioxide having an average particle size above 0.5 micrometer, is irradiated with laser light in the pattern of the marking.

23. Polymer composition according to claim 1 containing from 0.5 to 10 wt % antimony trioxide and at least 0.1 wt.% of a nacreous pigment.

24. The composition of claim 1 wherein when exposed to laser light the composition forms a mark with a contrast value of at least 1.5.

25. A light colored laser markable polymer composition comprising:

a) polymer

b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles with an average particle size above 0.5 micrometer; and

c) at least 0.3 wt % of a nacreous pigment,

wherein when exposed to laser light the composition forms a mark with a contrast value of at least 1.5.

26. Polymer composition of claim 25 wherein the antimony trioxide particles have a particle size between 1 and 8 micrometers.

27. Polymer composition according to claim 25, wherein the polymer composition is free of halogen-flame retardant.

28. Polymer composition according to claim 25 containing from 0.1 to 5 wt % antimony trioxide and at least 0.4 wt.% of a nacreous pigment.